Self-assembled monolayers of bisphosphonates: Influence of side chain steric hindrance

Submitted by Emmanuel Lemoine on Fri, 07/18/2014 - 13:55

Titre	Self-assembled monolayers of bisphosphonates: Influence of side chain steric hindrance
Type de publication	Article de revue
Auteur	Lecollinet, Grégory [1], Delorme, Nicolas [2], Edely, M. [3], Gibaud, Alain [4], Bardeau, Jean-François [5], Hindré, François [6], Boury, Frank [7], Portet, David [8]
Editeur	American Chemical Society
Type	Article scientifique dans une revue à comité de lecture
Année	2009
Langue	Anglais
Date	2009
Numéro	14
Pagination	7828-7835
Volume	25
Titre de la revue	Langmuir
ISSN	0743-7463
Mots-clés	Angle measurement [9], atomic force microscopy [10], bisphosphonates [11], Chemical reactions [12], Contact angle [13], Industrial applications [14], Layer thickness [15], Methylene iodide [16], Model surface [17], Oxidized surfaces [18], Perfluoropolyether [19], SAMs [20], Self assembled monolayers [21], Side chains [22], Stainless steel [23], Standard materials [24], Steric hindrances [25], Surface coverages [26], surfaces [27], titanium [28], UltraFlat [29], Water contact angle [30], X-ray reflectivity analysis [31]
Résumé en anglais	Bisphosphonates form self-assembled monolayers (SAMs) spontaneously on stainless steel, silicon, and titanium oxidized surfaces. We used contact angle measurements, atomic force microscopy, and X-ray reflectivity analysis to study the formation of SAMs on a model surface of ultraflat titanium (rms=0.2 nm). The results were extended to standard materials (mechanically polished titanium, stainless steel, and silicon) and showed that water-soluble bisphosphonic perfluoropolyether can easily form SAMs, with 100% surface coverage and a layer thickness of less than 3 nm. Hydrophobic (water contact angle >110° on stainless steel or titanium) and lipophobic (methylene iodide contact angle >105° on titanium) properties are discussed in terms of industrial applications.
URL de la notice	http://okina.univ-angers.fr/publications/ua3741 [32]
DOI	10.1021/la8039576s [33]

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